

REMARKS

Applicants have amended the dependencies of claims 34-38, 43, 44, 47, and 50. Applicants have also cancelled claims 33 and 41 without prejudice to their later prosecution in this or another application.

New claim 52 has been added. That claim incorporates the limitations of claim 41. Since all of these inventions are reasonably conveyed by the specification and original claims, there is no issue of new matter.

Upon entry of this amendment, Claims 34-40, 43, 44, and 47-53 are pending.

Rejections under 35 U.S.C. §112

Claims 33-41, 43, 44, 47, and 49-52, are rejected under 35 U.S.C. 112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Office has expressed concerns regarding the phrase “the movement of the DNA through the solution is in a direction parallel to the temperature gradient.” Applicant respectfully traverses that rejection.

As the Office is aware, there is no legal requirement for explicit description. Rather the test for written description is whether the applicants’ specification contains “a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art ... to make and use the same....” 35 U.S.C. § 112.

Applicant respectfully maintains that there is ample support in the specification for the phrase “the movement of the DNA through the solution is in a direction parallel to the temperature gradient.” See, e.g., paragraph 13. However, in the interest of compact prosecution, Applicant has amended the claims herein. As the rejection is moot, Applicant requests that it be withdrawn.

Rejections under 35 U.S.C. §102

Claims 33-35 and 37 are rejected under 35 U.S.C. 102(b), as allegedly being anticipated by Ke et al. (1996) Nucleic Acids Research, 24:707-712 (“Ke”). Claims 33-41, 43, 44, 47, 49, 51, and 52 are rejected under 35 U.S.C. 102(3), as allegedly being anticipated by

Blumenfeld et al. US 6,733,72 ("Blumenfeld"). Finally, Claims 33-35, 41, 43, 44, 47, and 49-52 are rejected under 35 U.S.C. 102(3), as allegedly being anticipated by Nakao et al. US 6,589,740 ("Nakao"). Applicant respectfully traverse those rejections.

Each of those references have been discussed in detail in Applicant's prior response. So, again Applicant will not belabor the many reasons why those references do not teach or suggest the claimed invention.

Rather, Applicant will simply note that the cited art, either alone or in combination, does not teach or suggest:

a container designed to hold a solution of DNA and an array comprising a surface to which are covalently attached oligonucleotide probes at discrete, known locations therein; and
a temperature control system for creating a temperature gradient in the solution sufficient to cause at least a portion of the solution to be warmer than the remainder of the solution such that at least a portion of the DNA moves from the warmer portion of the solution to the cooler portion of the solution and wherein said temperature gradient can be oriented within said container such that at least a portion of the DNA can be driven to an array placed within said container.

More specifically, Blumenfeld discloses an apparatus for "establishing a temperature gradient on a semiconducting wafer" (col. 2, lines 44-45), which can be "transmitted to one or more stratum placed on the wafer" (col. 5, lines 5-7) including "DNA chips" (col. 5, line 37). Temperature gradients "at a given site on the wafer depend[] on the distance from attachment sites" of "two electric connectors." (col. 4, lines 27, 34-35.) And thus "[n]ucleic acid molecules at different positions on the chip are exposed to different temperatures based on their location relative to the temperature gradient." (col. 5, lines 43-35; see *also* col. 7, lines 9-30; Fig. 4a, 5a (showing gradient on the wafer)).

In contrast, in the apparatus of the present invention, the temperature gradient is oriented so as to drive at least a portion of the DNA to an array that can be placed within the container. In other words, that array would not be exposed to different temperatures, but the same temperature because the temperature gradient is established not on the chip but "perpendicular to the array surface" (Specification at [0013]; Fig. 1 (showing temperature 1 (T1) and temperature 2 (T2) on either side of the microarray compared to, for example, Fig.

10 of Blumenfeld showing different temperatures at different points across the surface of the array)). Blumenfeld thus does not teach or suggest the claimed invention.

Moreover, Nakao discloses an apparatus with a temperature control for generating constant temperatures over time, not thermal gradients in a slab gel. (col. 2, lines 15, 19-20; Office Action at p. 8.) Nakao does not teach or suggest the apparatus claimed herein.

Finally, Ke describes methods for conducting parallel and perpendicular temperature-gradient gel electrophoresis. The Office had not rejected claim 41 over Ke. As the limitation of that claim have been incorporated into new claim 52, Applicants believe that the rejection over Ke is moot.

Applicants respectfully maintain that the cited art does not teach or suggest the claimed invention and requests that the rejection be withdrawn.


In view of the foregoing amendments and remarks, Applicants respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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